

Receipt Date: February 5, 2018
Cal. Date: February 5, 2018
Report Date: February 5, 2018

REC'D FEB 14 2018

Report No.: 338895
Serial No.: 03-19207-13
Barcode: 201317

Calibration Certificate

R&R PETROLEUM EQUIPMENT SALES
5115 COUNTY ROAD 81 N
FARGO, ND 58102-7401
Contact: JIM SCHAEFER
Phone: 701-293-1707
PO Number: NONE
Procedure: NIST SOP 19
Technician ID: 11

Item(s) Submitted: 5 Gallon Prover
Manufacturer: Seraphin
Material: Stainless Steel
Type: No Bottom Zero
Condition: Good
Temperature: 18.4 °C
Pressure: 738.7 mmHg
Relative Humidity: 37.1 %
Standard H₂O Temp.: 11.5 °C
Artifact H₂O Temp.: 11.9 °C

Nominal		Calibrated				
Volume (gal)		Volume (gal)	Error (in ³)	<i>k</i>	U (in ³)	CCE (1/°F)
5	As Found	4.99968	-0.07	2.05	0.25	0.0000265
	As Left	4.99968	-0.07			

Neck Calibration: No neck calibration was performed at this time.

This prover has been calibrated as a "to contain after wet down" vessel with a drain time of 30 seconds after cessation of full flow.

The vessel listed above has been compared by volumetric transfer methods to the standards of the State of Minnesota using water as the calibration medium. The standards are traceable to the SI through NIST. Statistical process control charts indicate standards are currently in control. All gauges were sealed in place.

All tolerances and specifications were evaluated according to NIST Handbook 105-3 (2010). Uncertainty calculations contain the components in NIST SOP 19 and conform to the ISO/IEC Guide to the Expression of Uncertainty in Measurement (2008), including coverage factors (*k*) calculated at the approximate 95.45 % confidence level. Results apply to item identified in this report only.

CCE is the cubical coefficient of thermal expansion, and the reference temperature is 60 °F
Conversion to SI unit: 1 gallon = 231 in³ = 0.00378541 m³.

Pete Whebbe

Pete Whebbe
Metrologist

Reviewed by:

Erik Alfvin

Erik Alfvin
Metrologist

Receipt Date:	February 5, 2018	Report No.:	338896
Cal. Date:	February 6, 2018	Serial No.:	01-51382
Report Date:	February 6, 2018	Barcode:	201318

Calibration Certificate

R&R PETROLEUM EQUIPMENT SALES
5115 COUNTY ROAD 81 N
FARGO, ND 58102-7401
Contact: JIM SCHAEFER
Phone: 701-293-1707
PO Number: None
Procedure: NIST SOP 19
Technician ID: 19

Item(s) Submitted: 5 Gallon Measure
Manufacturer: Seraphin
Material: Mild Steel
Type: Measure
Condition: Good
Temperature: 18.5 °C
Pressure: 746.4 mmHg
Relative Humidity: 40.5 %
Standard H₂O Temp.: 13.6 °C
Artifact H₂O Temp.: 13.5 °C

Nominal		Calibrated				
Volume (gal)		Volume (gal)	Error (in ³)	<i>k</i>	U (in ³)	CCE (1/°F)
5	As Found	5.00368	0.85	2.05	0.25	0.0000186
	As Left	4.99983	-0.04			

Neck Calibration: No neck calibration was performed at this time.

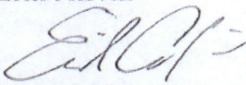
This measure has been calibrated as a "to contain after wet down" vessel with a pour time of 30 seconds followed by a drain time of 10 seconds after cessation of full flow.

The vessel listed above has been compared by volumetric transfer methods to the standards of the State of Minnesota using water as the calibration medium. The standards are traceable to the SI through NIST. Statistical process control charts indicate standards are currently in control. All gauges were sealed in place.

All tolerances and specifications were evaluated according to NIST Handbook 105-3 (2010). Uncertainty calculations contain the components in NIST SOP 19 and conform to the ISO/IEC Guide to the Expression of Uncertainty in Measurement (2008), including coverage factors (*k*) calculated at the approximate 95.45 % confidence level. Results apply to item identified in this report only.

CCE is the cubical coefficient of thermal expansion, and the reference temperature is 60 °F
Conversion to SI unit: 1 gallon = 231 in³ = 0.00378541 m³.

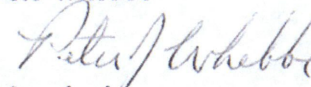
Erik Alfvin



Metrologist

Reviewed by:

Pete Whebbe



Metrologist

Receipt Date:	February 5, 2018	Report No.:	338897
Cal. Date:	February 6, 2018	Serial No.:	02-52149
Report Date:	February 6, 2018	Barcode:	201319

Calibration Certificate

R&R PETROLEUM EQUIPMENT SALES
5115 COUNTY ROAD 81 N
FARGO, ND 58102-7401
Contact: JIM SCHAEFER
Phone: 701-293-1707
PO Number: None
Procedure: NIST SOP 19
Technician ID: 19

Item(s) Submitted: 5 Gallon Measure
Manufacturer: Seraphin
Material: Mild Steel
Type: Measure
Condition: Good
Temperature: 18.5 °C
Pressure: 746.4 mmHg
Relative Humidity: 40.5 %
Standard H₂O Temp.: 11.0 °C
Artifact H₂O Temp.: 11.2 °C

Nominal		Calibrated				
Volume (gal)		Volume (gal)	Error (in ³)	<i>k</i>	U (in ³)	CCE (°F)
5	As Found	5.00188	0.43	2.05	0.25	0.0000186
	As Left	4.99970	-0.07			

Neck Calibration: No neck calibration was performed at this time.

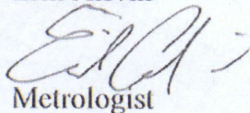
This measure has been calibrated as a "to contain after wet down" vessel with a pour time of 30 seconds followed by a drain time of 10 seconds after cessation of full flow.

The vessel listed above has been compared by volumetric transfer methods to the standards of the State of Minnesota using water as the calibration medium. The standards are traceable to the SI through NIST. Statistical process control charts indicate standards are currently in control. All gauges were sealed in place.

All tolerances and specifications were evaluated according to NIST Handbook 105-3 (2010). Uncertainty calculations contain the components in NIST SOP 19 and conform to the ISO/IEC Guide to the Expression of Uncertainty in Measurement (2008), including coverage factors (*k*) calculated at the approximate 95.45 % confidence level. Results apply to item identified in this report only.

CCE is the cubical coefficient of thermal expansion, and the reference temperature is 60 °F
Conversion to SI unit: 1 gallon = 231 in³ = 0.00378541 m³.

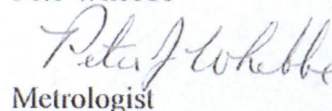
Erik Alfvín



Metrologist

Reviewed by:

Pete Whebbe



Metrologist

Receipt Date:	February 5, 2018	Report No.:	338898
Cal. Date:	February 6, 2018	Serial No.:	22459
Report Date:	February 6, 2018	Barcode:	201322

Calibration Certificate

R&R PETROLEUM EQUIPMENT SALES	Item(s) Submitted:	5 Gallon Measure
5115 COUNTY ROAD 81 N	Manufacturer:	Ellisco
FARGO, ND 58102-7401	Material:	Mild Steel
Contact: JIM SCHAEFER	Type:	Measure
Phone: 701-293-1707	Condition:	Good
PO Number: NONE	Temperature:	18.5 °C
Procedure: NIST SOP 19	Pressure:	746.4 mmHg
Technician ID: 19	Relative Humidity:	40.5 %
	Standard H ₂ O Temp.:	11.2 °C
	Artifact H ₂ O Temp.:	11.2 °C

Nominal		Calibrated				
Volume (gal)		Volume (gal)	Error (in ³)	<i>k</i>	U (in ³)	CCE (1/°F)
5	As Found	5.00183	0.42	2.05	0.25	0.0000186
	As Left	4.99968	-0.07			

Neck Calibration: No neck calibration was performed at this time.

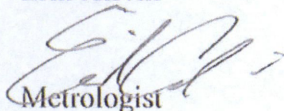
This measure has been calibrated as a "to contain after wet down" vessel with a pour time of 30 seconds followed by a drain time of 10 seconds after cessation of full flow.

The vessel listed above has been compared by volumetric transfer methods to the standards of the State of Minnesota using water as the calibration medium. The standards are traceable to the SI through NIST. Statistical process control charts indicate standards are currently in control. All gauges were sealed in place.

All tolerances and specifications were evaluated according to NIST Handbook 105-3 (2010). Uncertainty calculations contain the components in NIST SOP 19 and conform to the ISO/IEC Guide to the Expression of Uncertainty in Measurement (2008), including coverage factors (*k*) calculated at the approximate 95.45 % confidence level. Results apply to item identified in this report only.

CCE is the cubical coefficient of thermal expansion, and the reference temperature is 60 °F
Conversion to SI unit: 1 gallon = 231 in³ = 0.00378541 m³.

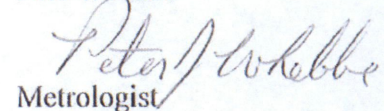
Erik Alfvin



Metrologist

Reviewed by:

Pete Whebbe



Metrologist

Receipt Date:	February 5, 2018	Report No.:	338899
Cal. Date:	February 6, 2018	Serial No.:	None
Report Date:	February 6, 2018	Barcode:	201321

Calibration Certificate

R&R PETROLEUM EQUIPMENT SALES
5115 COUNTY ROAD 81 N
FARGO, ND 58102-7401
Contact: JIM SCHAEFER
Phone: 701-293-1707
PO Number: None
Procedure: NIST SOP 19
Technician ID: 19

Item(s) Submitted: 5 Gallon Measure
Manufacturer: Seraphin
Material: Mild Steel
Type: Measure
Condition: Good
Temperature: 18.5 °C
Pressure: 746.4 mmHg
Relative Humidity: 40.5 %
Standard H₂O Temp.: 10.4 °C
Artifact H₂O Temp.: 10.4 °C

Nominal		Calibrated				
Volume (gal)		Volume (gal)	Error (in ³)	<i>k</i>	U (in ³)	CCE (°F)
5	As Found	5.00265	0.61	2.05	0.25	0.0000186
	As Left	5.00004	0.01			

Neck Calibration: No neck calibration was performed at this time.

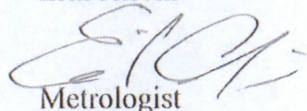
This measure has been calibrated as a "to contain after wet down" vessel with a pour time of 30 seconds followed by a drain time of 10 seconds after cessation of full flow.

The vessel listed above has been compared by volumetric transfer methods to the standards of the State of Minnesota using water as the calibration medium. The standards are traceable to the SI through NIST. Statistical process control charts indicate standards are currently in control. All gauges were sealed in place.

All tolerances and specifications were evaluated according to NIST Handbook 105-3 (2010). Uncertainty calculations contain the components in NIST SOP 19 and conform to the ISO/IEC Guide to the Expression of Uncertainty in Measurement (2008), including coverage factors (*k*) calculated at the approximate 95.45 % confidence level. Results apply to item identified in this report only.

CCE is the cubical coefficient of thermal expansion, and the reference temperature is 60 °F
Conversion to SI unit: 1 gallon = 231 in³ = 0.00378541 m³.

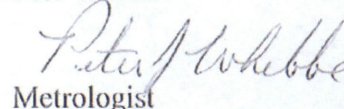
Erik Alfvin



Metrologist

Reviewed by:

Pete Whebbe



Metrologist

Receipt Date:	February 5, 2018	Report No.:	338900
Cal. Date:	February 6, 2018	Serial No.:	45284
Report Date:	February 6, 2018	Barcode:	201320

Calibration Certificate

R&R PETROLEUM EQUIPMENT SALES
5115 COUNTY ROAD 81 N
FARGO, ND 58102-7401
Contact: JIM SCHAEFER
Phone: 701-293-1707
PO Number: None
Procedure: NIST SOP 19
Technician ID: 19

Item(s) Submitted: 5 Gallon Measure
Manufacturer: Seraphin
Material: Stainless Steel
Type: Measure
Condition: Good
Temperature: 18.5 °C
Pressure: 746.4 mmHg
Relative Humidity: 40.5 %
Standard H₂O Temp.: 10.5 °C
Artifact H₂O Temp.: 10.7 °C

Nominal		Calibrated				
Volume (gal)		Volume (gal)	Error (in ³)	<i>k</i>	U (in ³)	CCE (°F)
5	As Found	4.99936	-0.15	2.05	0.25	0.0000265
	As Left	4.99936	-0.15			

Neck Calibration: No neck calibration was performed at this time.

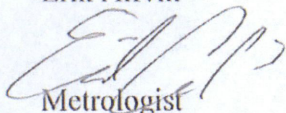
This measure has been calibrated as a "to contain after wet down" vessel with a pour time of 30 seconds followed by a drain time of 10 seconds after cessation of full flow.

The vessel listed above has been compared by volumetric transfer methods to the standards of the State of Minnesota using water as the calibration medium. The standards are traceable to the SI through NIST. Statistical process control charts indicate standards are currently in control. All gauges were sealed in place.

All tolerances and specifications were evaluated according to NIST Handbook 105-3 (2010). Uncertainty calculations contain the components in NIST SOP 19 and conform to the ISO/IEC Guide to the Expression of Uncertainty in Measurement (2008), including coverage factors (*k*) calculated at the approximate 95.45 % confidence level. Results apply to item identified in this report only.

CCE is the cubical coefficient of thermal expansion, and the reference temperature is 60 °F
Conversion to SI unit: 1 gallon = 231 in³ = 0.00378541 m³.

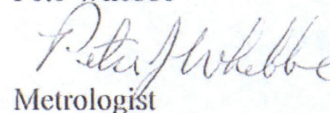
Erik Alfvin



Metrologist

Reviewed by:

Pete Whebbe



Metrologist

Receipt Date: February 5, 2018
Cal. Date: February 5, 2018
Report Date: February 5, 2018

Report No.: 338901
Serial No.: 99-10282-32
Barcode: 202414

Calibration Certificate

R&R PETROLEUM EQUIPMENT SALES
5115 COUNTY ROAD 81 N
FARGO, ND 58102-7401
Contact: JIM SCHAEFER
Phone: 701-293-1707
PO Number: NONE
Procedure: NIST SOP 19
Technician ID: 11

Item(s) Submitted: 5 Gallon Measure
Manufacturer: Seraphin
Material: Stainless Steel
Type: Measure
Condition: Good/Dirty
Temperature: 18.4 °C
Pressure: 738.7 mmHg
Relative Humidity: 37.1 %
Standard H₂O Temp.: 11.5 °C
Artifact H₂O Temp.: 11.7 °C

Nominal		Calibrated				
Volume (gal)		Volume (gal)	Error (in ³)	<i>k</i>	U (in ³)	CCE (°F)
5	As Found	5.00092	0.21	2.05	0.25	0.0000265
	As Left	5.00092	0.21			

Neck Calibration: No neck calibration was performed at this time.

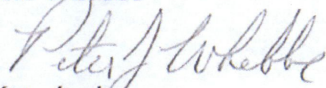
This measure has been calibrated as a "to contain after wet down" vessel with a pour time of 30 seconds followed by a drain time of 10 seconds after cessation of full flow.

The vessel listed above has been compared by volumetric transfer methods to the standards of the State of Minnesota using water as the calibration medium. The standards are traceable to the SI through NIST. Statistical process control charts indicate standards are currently in control. All gauges were sealed in place.

All tolerances and specifications were evaluated according to NIST Handbook 105-3 (2010). Uncertainty calculations contain the components in NIST SOP 19 and conform to the ISO/IEC Guide to the Expression of Uncertainty in Measurement (2008), including coverage factors (*k*) calculated at the approximate 95.45 % confidence level. Results apply to item identified in this report only.

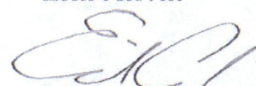
CCE is the cubical coefficient of thermal expansion, and the reference temperature is 60 °F
Conversion to SI unit: 1 gallon = 231 in³ = 0.00378541 m³.

Pete Whebbe


Metrologist

Reviewed by:

Erik Alfvín


Metrologist

Receipt Date:	February 5, 2018	Report No.:	338902
Cal. Date:	February 6, 2018	Serial No.:	None
Report Date:	February 7, 2018	Barcode:	201808

Calibration Certificate

R&R PETROLEUM EQUIPMENT SALES
5115 COUNTY ROAD 81 N
FARGO, ND 58102-7401
Contact: JIM SCHAEFER
Phone: 701-293-1707
PO Number: None
Procedure: NIST SOP 19
Technician ID: 19

Item(s) Submitted: 5 Gallon Measure
Manufacturer: Ellisco
Material: Mild Steel
Type: Measure
Condition: Good
Temperature: 18.5 °C
Pressure: 746.4 mmHg
Relative Humidity: 40.5 %
Standard H₂O Temp.: 11.2 °C
Artifact H₂O Temp.: 11.2 °C

Nominal		Calibrated				
Volume (gal)		Volume (gal)	Error (in ³)	<i>k</i>	U (in ³)	CCE (°F)
5	As Found	4.99967	-0.08	2.05	0.25	0.0000186
	As Left	4.99967	-0.08			

Neck Calibration: No neck calibration was performed at this time.

This measure has been calibrated as a "to contain after wet down" vessel with a pour time of 30 seconds followed by a drain time of 10 seconds after cessation of full flow.

The vessel listed above has been compared by volumetric transfer methods to the standards of the State of Minnesota using water as the calibration medium. The standards are traceable to the SI through NIST. Statistical process control charts indicate standards are currently in control. All gauges were sealed in place.

All tolerances and specifications were evaluated according to NIST Handbook 105-3 (2010). Uncertainty calculations contain the components in NIST SOP 19 and conform to the ISO/IEC Guide to the Expression of Uncertainty in Measurement (2008), including coverage factors (*k*) calculated at the approximate 95.45 % confidence level. Results apply to item identified in this report only.

CCE is the cubical coefficient of thermal expansion, and the reference temperature is 60 °F
Conversion to SI unit: 1 gallon = 231 in³ = 0.00378541 m³.

Erik Alfvín

Reviewed by:

Pete Whebbe

Pete Whebbe
Metrologist

Erik Alfvín
Metrologist

Receipt Date: February 5, 2018
Cal. Date: February 6, 2018
Report Date: February 7, 2018

Report No.: 338903
Serial No.: 01-51354
Barcode: 202360

Calibration Certificate

R&R PETROLEUM EQUIPMENT SALES
5115 COUNTY ROAD 81 N
FARGO, ND 58102-7401
Contact: JIM SCHAEFER
Phone: 701-293-1707
PO Number: None
Procedure: NIST SOP 19
Technician ID: 19

Item(s) Submitted: 5 Gallon Measure
Manufacturer: Seraphin
Material: Mild Steel
Type: Measure
Condition: Fair/Dented Neck
Temperature: 18.5 °C
Pressure: 746.4 mmHg
Relative Humidity: 40.5 %
Standard H₂O Temp.: 12.6 °C
Artifact H₂O Temp.: 12.7 °C

Nominal		Calibrated				
Volume (gal)		Volume (gal)	Error (in ³)	<i>k</i>	U (in ³)	CCE (°F)
5	As Found	5.00324	0.75	2.05	0.25	0.0000186
	As Left	4.99954	-0.11			

Neck Calibration: No neck calibration was performed at this time.


This measure has been calibrated as a "to contain after wet down" vessel with a pour time of 30 seconds followed by a drain time of 10 seconds after cessation of full flow.

The vessel listed above has been compared by volumetric transfer methods to the standards of the State of Minnesota using water as the calibration medium. The standards are traceable to the SI through NIST. Statistical process control charts indicate standards are currently in control. All gauges were sealed in place.

All tolerances and specifications were evaluated according to NIST Handbook 105-3 (2010). Uncertainty calculations contain the components in NIST SOP 19 and conform to the ISO/IEC Guide to the Expression of Uncertainty in Measurement (2008), including coverage factors (*k*) calculated at the approximate 95.45 % confidence level. Results apply to item identified in this report only.

CCE is the cubical coefficient of thermal expansion, and the reference temperature is 60 °F
Conversion to SI unit: 1 gallon = 231 in³ = 0.00378541 m³.

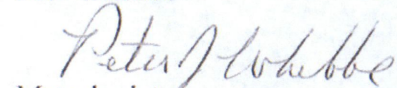
Erik Alfvin



Metrologist

Reviewed by:

Pete Whebbe



Metrologist

Receipt Date:	February 5, 2018	Report No.:	338904
Cal. Date:	February 6, 2018	Serial No.:	None
Report Date:	February 7, 2018	Barcode:	202104

Calibration Certificate

R&R PETROLEUM EQUIPMENT SALES
5115 COUNTY ROAD 81 N
FARGO, ND 58102-7401
Contact: JIM SCHAEFER
Phone: 701-293-1707
PO Number: None
Procedure: NIST SOP 19
Technician ID: 19

Item(s) Submitted: 5 Gallon Measure
Manufacturer: Seraphin
Material: Mild Steel
Type: Measure
Condition: Good
Temperature: 18.5 °C
Pressure: 746.4 mmHg
Relative Humidity: 40.5 %
Standard H₂O Temp.: 11.0 °C
Artifact H₂O Temp.: 11.0 °C

Nominal		Calibrated				
Volume (gal)		Volume (gal)	Error (in ³)	<i>k</i>	U (in ³)	CCE (°F)
5	As Found	4.99945	-0.13	2.05	0.25	0.0000186
	As Left	4.99945	-0.13			

Neck Calibration: No neck calibration was performed at this time.

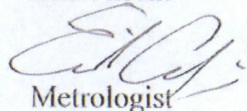
This measure has been calibrated as a "to contain after wet down" vessel with a pour time of 30 seconds followed by a drain time of 10 seconds after cessation of full flow.

The vessel listed above has been compared by volumetric transfer methods to the standards of the State of Minnesota using water as the calibration medium. The standards are traceable to the SI through NIST. Statistical process control charts indicate standards are currently in control. All gauges were sealed in place.

All tolerances and specifications were evaluated according to NIST Handbook 105-3 (2010). Uncertainty calculations contain the components in NIST SOP 19 and conform to the ISO/IEC Guide to the Expression of Uncertainty in Measurement (2008), including coverage factors (*k*) calculated at the approximate 95.45 % confidence level. Results apply to item identified in this report only.

CCE is the cubical coefficient of thermal expansion, and the reference temperature is 60 °F
Conversion to SI unit: 1 gallon = 231 in³ = 0.00378541 m³.

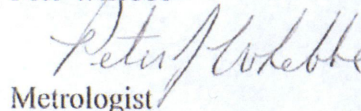
Erik Alfvin



Metrologist

Reviewed by:

Pete Whebbe



Metrologist

Receipt Date: February 5, 2018
Cal. Date: February 5, 2018
Report Date: February 5, 2018

REC'D FEB 14 2018

Report No.: 338894
Serial No.: 3967360-5
Barcode: 201328

Calibration Certificate

R&R PETROLEUM EQUIPMENT SALES
5115 COUNTY ROAD 81 N
FARGO, ND 58102-7401
Contact: JIM SCHAEFER
Phone: 701-293-1707
PO Number: NONE
Procedure: NIST SOP 19
Technician ID: 11

Item(s) Submitted: 100 Gallon Prover
Manufacturer: Brownie
Material: Stainless Steel
Type: No Bottom Zero
Condition: Good
Temperature: 18.6 °C
Pressure: 738.1 mmHg
Relative Humidity: 42.2 %
Standard H₂O Temp.: 6.5 °C
Artifact H₂O Temp.: 6.6 °C

Nominal		Calibrated				
Volume (gal)		Volume (gal)	Error (in ³)	<i>k</i>	U (in ³)	CCE (°F)
100	As Found	99.9994	-0.1	2.00	2.2	0.0000265
	As Left	99.9994	-0.1			

Neck Calibration: No neck calibration was performed at this time.

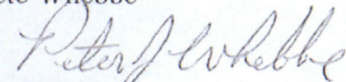
This prover has been calibrated as a "to contain after wet down" vessel with a drain time of 30 seconds after cessation of full flow.

The vessel listed above has been compared by volumetric transfer methods to the standards of the State of Minnesota using water as the calibration medium. The standards are traceable to the SI through NIST. Statistical process control charts indicate standards are currently in control. All gauges were sealed in place.

All tolerances and specifications were evaluated according to NIST Handbook 105-3 (2010). Uncertainty calculations contain the components in NIST SOP 19 and conform to the ISO/IEC Guide to the Expression of Uncertainty in Measurement (2008), including coverage factors (*k*) calculated at the approximate 95.45 % confidence level. Results apply to item identified in this report only.

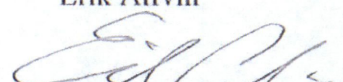
CCE is the cubical coefficient of thermal expansion, and the reference temperature is 60 °F
Conversion to SI unit: 1 gallon = 231 in³ = 0.00378541 m³.

Pete Whebbe


Metrologist

Reviewed by:

Erik Alfvin


Metrologist

United States Department of Commerce

National Institute of Standards and Technology

Certificate of Metrological Traceability For:

Minnesota

This laboratory has demonstrated evidence of an unbroken chain of metrological traceability of its standards to the international system of units (SI), documented measurement uncertainties, uses documented measurement procedures, successfully completed training and proficiency tests, documented calibration intervals, submitted a quality management system, and demonstrated suitable measurement assurance for the Scope listed on this certificate.

The Office of Weights and Measures Program assesses laboratories to NIST Handbook 143 - Program Handbook for State Weights and Measures Laboratories and ISO/IEC 17025:2005.

Scope

Mass Echelon I		Mass Echelon III	Volume Gravimetric, I
20 kg to 1 mg		50 kg to 1 mg	20 L to 10 ml
50 lb to 0.001 lb		5000 lb to 0.001 lb	100 gal to 0.25 gal
Mass Echelon II		4 oz to 0.03125 oz	Volume Transfer, II
20 kg to 1 mg		Weight Carts	1500 gal to 5 gal
1000 lb to 500 lb		10 000 lb to 2000 lb	200 gal to 25 gal LPG
50 lb to 0.001 lb		Wheel Load Weighers	
4 oz to 0.03125 oz		20 000 lb to 2000 lb	
		Railroad Test Cars	
		110 000 lb to 80 000 lb	



2018 to 2019

Douglas A. Olson

Douglas A. Olson, Chief
NIST Office of Weights and Measures

Effective Dates: 2018-01-01 to 2019-12-31